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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/651,680	08/28/2003	Sung Q. Lee	51876P340	9308

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EXAMINER

JACKSON, ANDRE K

ART UNIT PAPER NUMBER

2856

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/651,680

Applicant(s)

LEE ET AL.

Examiner

André K. Jackson

Art Unit

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

1. In response to applicant's communication dated 05/26/05 regarding the last Office action, the following corrective action is taken.

The period for reply of 3 MONTHS set in said Office Action is restarted to begin with the mailing date of this letter.

The reference Yasutake et al. was not correctly cited in the last Office action. The correct citation is shown on the attached PTO-892.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1,4,5,8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasutake et al. in view of Somerville et al.

Regarding claim 1, Yasutake et al. disclose in the patent entitled "Sampling scanning probe microscope and sampling method thereof" sensing means for sensing the sample surface based on an amplitude variation resonant frequency of the sensing means keeping a uniform distance from the sample surface which is moving in one plane; a frequency transforming means for transforming a signal sensed by the sensing means to a first signal having frequency; a frequency combining means combining the first signal second signal outputted from frequency generator to generate combined signal (Figures 1,2,7; (oscillator 7).

Yasutake et al. do not disclose where the frequency of the second signal is identical to the resonant frequency and the second signal frequency is a higher frequency than frequency the first signal; and an actuating means actuating the sensing means response to the first signal and providing the combined signal to the sensing means to selectively actuate the sensing means at the second signal frequency. However, Somerville et al. disclose in the patent entitled "Planar transformer assembly including non-overlapping primary and secondary windings surrounding a common magnetic flux path area" where the frequency of the second signal is identical to the resonant frequency and the second signal frequency is a higher frequency than frequency the first signal; and an actuating means actuating the sensing means response to the first signal and providing the combined signal to the sensing means to selectively actuate the sensing

means at the second signal frequency (Claim 21). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yasutake et al. to include where the frequency of the second signal is identical to the resonant frequency and the second signal frequency is a higher frequency than frequency the first signal; and an actuating means actuating the sensing means response to the first signal and providing the combined signal to the sensing means to selectively actuate the sensing means at the second signal frequency. By adding this feature the apparatus would be able to have the sensing means accurately position the sensor for measurement.

Regarding claim 4, Yasutake et al. where the sensing means includes a cantilever, which is attached to the actuating means; a tip, which is mounted at a distal end of the cantilever for tracking the sample surface; and a sensing unit, which is attached to a predetermined area cantilever sensing sample surface (Figure 1; phase detector 14).

Regarding claim 5, Yasutake et al. disclose where the tip has a probe and is used as an atomic force microscope (Abstract).

Regarding claim 8, Yasutake et al. disclose where the actuating means is one of a piezo actuator, a bimorph actuator, and a voice coil motor (1).

Regarding claim 9, Yasutake et al. disclose sensing the sample surface based on an amplitude variation of resonant frequency by keeping uniform distance from the sample which is moving in one plane; transforming sensed signal first signal having a frequency and performing the sensing step in response to the first signal and using combined signal selectively perform the sensing step selectively at the second signal frequency (Figures 1,2,7). Yasutake et al. do not disclose combining the first signal and a second signal to generate a combined signal, where a frequency of the second signal is identical to the resonant frequency; and the second signal frequency is a higher than the frequency of the first signal and performing the sensing step in response to the first signal and using combined signal selectively perform the sensing step selectively at the second signal frequency. However, Somerville et al. disclose combining the first signal and a second signal to generate a combined signal, where a frequency of the second signal is identical to the resonant frequency; and the second signal frequency is a higher than the frequency of the first signal and performing the sensing step in response to the first signal and using combined signal selectively perform the sensing step selectively at the second signal frequency (Claim 21). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yasutake et al. to include combining the first signal and a second signal to generate a combined signal, where a

frequency of the second signal is identical to the resonant frequency; and the second signal frequency is a higher than the frequency of the first signal and performing the sensing step in response to the first signal and using combined signal selectively perform the sensing step selectively at the second signal frequency. By adding this feature the apparatus would be able to have the sensing means accurately position the sensor for measurement.

4. Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasutake et al. in view of Somerville et al. and further in view of Quate et al. (5666190).

Regarding claim 2, Yasutake et al. do not disclose where the sensing means measures amplitude variation of the resonant frequency which is proportional to a displacement of a gap in the sample surface, while the sensing means is maintained at a uniform distance from the sample surface through the use of the actuating means which is driven in a direction perpendicular to the sample surface in response to the first signal. However, Quate et al. disclose in the patent entitled "Method of performing lithography using cantilever array" where the sensing means measures amplitude variation of the resonant frequency which is proportional to a displacement of a gap in the sample surface, while the sensing means is maintained at a uniform distance from the sample surface through the use of the actuating means which is driven in a

direction perpendicular to the sample surface in response to the first signal. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yasutake et al. to include where the sensing means measures amplitude variation of the resonant frequency which is proportional to a displacement of a gap in the sample surface, while the sensing means is maintained at a uniform distance from the sample surface through the use of the actuating means which is driven in a direction perpendicular to the sample surface in response to the first signal. By adding this feature the apparatus would be able to have the sensing means accurately position the sensor for measurement.

Regarding claim 6, Yasutake et al. disclose where the tip has an aperture and is used as a near field scanning optical microscope. However, Quate et al. disclose where the tip has an aperture and is used as a near field scanning optical microscope (Column 18, lines 53-60). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yasutake et al. to include where the tip has an aperture and is used as a near field scanning optical microscope. By adding this feature the tip would allow light radiation flowing through the waveguide to be directed toward the sample.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yasutake et al. in view of Somerville et al. and further in view of Honma.

Regarding claim 3, Yasutake et al. do not disclose where the actuating means functions as a low pass filter by responding to the first signal. However, Honma discloses in the patent entitled "Method of controlling probe microscope" where the actuating means functions as a low pass filter by responding to the first signal (19). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yasutake et al. to include where the actuating means functions as a low pass filter by responding to the first signal. By adding this feature the apparatus would be able to cut out the high frequency component

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yasutake et al. in view of Somerville et al.

Regarding claim 7, Yasutake et al. do not disclose where the sample is moving in an X and Y direction by an X-Y scanner disposed under the sample. However, Kitamura et al. disclose in the patent entitled "Scanning probe microscope" where the sample is moving in an X and Y direction by an X-Y scanner disposed under the sample (Column 1, lines 15-25; Figure 4). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yasutake et al to include where the sample is moving in an X and Y direction by an X-Y scanner disposed under the sample. By adding this feature the apparatus

would be able to accurately gauge the particular aspects surface of the sample with the probe.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to André K. Jackson whose telephone number is (571) 272-2196. The examiner can normally be reached on Mon.-Thurs. 7AM-4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A.J.

August 3, 2005


HEZRON WILLIAMS
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